

# Relative importance of factors affecting text reading time and preference(II): Focusing on non-square form letter

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## Abstracts

Effectiveness of information conveyance in reading is affected by several factors such as line length, letter size, linespacing arrangement as well as typeface itself. This study examined relative importance of these factors by asking people to read the texts that was constituted with non-square form letter and rank the preference of texts through conjoint analysis. In the case of reading time, justification was the most important factor, followed by leading, line spacing, letter width, line length, font size, font type in their order of importance. And in the case of preference decision, letter width was the most important factor, followed by font size, justification, line spacing, leading, line length, font type. The result will be useful in understanding how to consider human preference in the Hangul typography.

*Keyword: Legibility, Readability, non-square form letter, conjoint analysis*

## 1. Introduction

Letter is a symbolic code system that transmit meaning and events which can be perceived. Letter should be distinguished easily, therefore, written information would be legible when the type of each letter shows a clear differences[1]. Although, rapid popularization of the office automated machine including personal computers made various new typefaces, the effectiveness of communicating information, the inherent role of letter were not fully regarded, because those were developed under the developer's sense of beauty not based on psycholinguistic research results and scientific data[2].

Moreover, the former researches about legibility and readability of Korean letter focused only on one individual variable with different levels, so didn't review which variable could affect the most considering various factors simultaneously[3]. In other word, though understanding the effect of individual factor on reading, there still remains a question about which variable should be considered the first in the text which is formed with various factors. This study started from the limitation of the study of Yi & Jin[3, 4]. That is, it is hard to make a general conclusion about relative importance among many variables that affect reading only with a result about the preference. Yi,

Park, & Jin(2000) examined relative importance of readability factors affecting text reading time and preference in the square-lettered text. In the case of reading time, leading was the most important factor, while in the case of preference, letter width was the most important factor. However, Korean(Hangul) letter's shape was differed in the degree of each factor's importance by contour of letter. In the study of Yi et al(1998, 1999), also, relative importance of factors affecting preference of the square-lettered text and non-squared text was different. In these days, some books composed of text with non-squared letter, such as books for children, were published. This experiments were conducted in order to examine relative importance of readability factors affecting text with non-squared letter.

affecting text reading time and preference. In the experiment 1, texts were composed of non-square letter form with usual letter width. 102 undergraduate students from Kyungpook National University participated in the experiment. Participants were recruited from 'introduction to psychology' classes at the Kyungpook National University. There were used seven factors affecting text processing[6]: font type, font size, letter width, leading, line width, line length, justification.

Arriving at the laboratory, explain the purpose of experiment and after presenting 16 kinds of text brunch set, start to read each text for one minute with the beginning alarm and stop with the final alarm, and then, mark at the last word he or she read. The average experiment time was 30 minutes.

## 2. Experiment 1

### 2.1 Method

The purpose of this experiment was to examine relative importance of factors

### 2.2 Result and discussion

In the analysis of mean utility for font type, non-square gothic font had more large effect on text reading speed than non-square

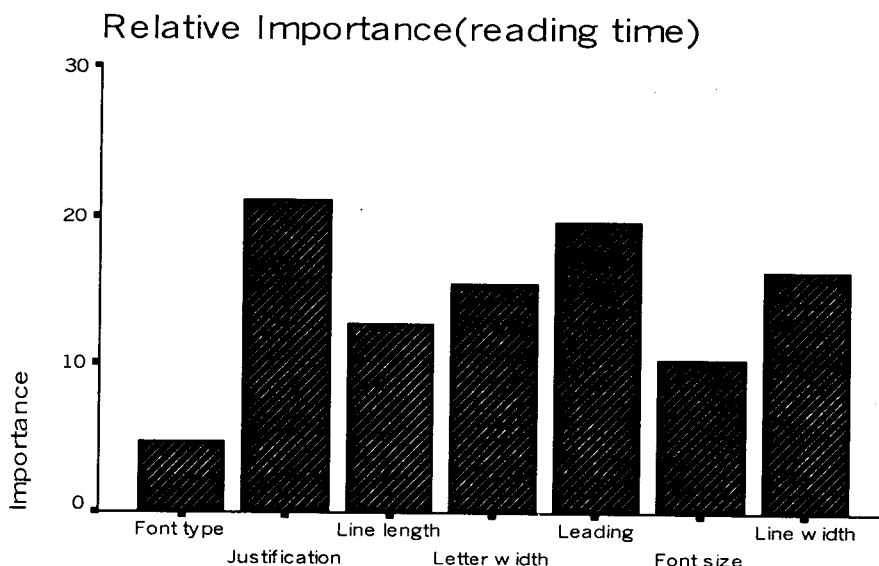


Fig 1. Relative importance of factors affecting text reading time

myungjo font. For font size, 10 point was most effective as compared to 8 point or 12 point.

In the case of letter width, 85% and 100% level had more large effect on text reading compared to 90% and 95% level, but this difference was not so great. For leading, -20% had more large effect on text reading compared to -10% and 0%. For line width, relative narrow 150% width had more large effect on text reading compared to 200% and 250% width. For line length, long line length(12cm) had more large effect on text reading speed than short line length(6cm or 9cm). In the justification, importance of 'justified' was more great than 'flush left(by letter)' and 'flush left(by word)'.

Fig 1. represents importance of 7 factors, considered with the difference of level in each factor. As seen in figure 1, justification marking 21.10%, affects the most. Leading, 19.57% is the next and the importance of line width, letter width, line length, font size was similar such as, 16.29%, 15.37%, 12.67%, and 10.30%. Relative importance of font type

was 4.70%. These results are clearly different with other studies- letter width(37.7%) was most important in Yi et al.(1998) focusing on the preference and font size had most influence in text with usual letter width(Yi et al., 1999). This suggests that the feature and influence on reading time of factor that is thought to be easily read are different

Experiment 1 purposed to review the importance of many factor that affect text reading speed. The result was different with previous studies about preference. Therefore, we needed to check out the preference under the same condition and analyze the results. Experiment 2 reviewed the relative importance of the factor that affects text preference.

### 3. Experiment 2

#### 3.1 Method

105 undergraduate students from Kyungpook National University participated in the experiment for course credit. Each

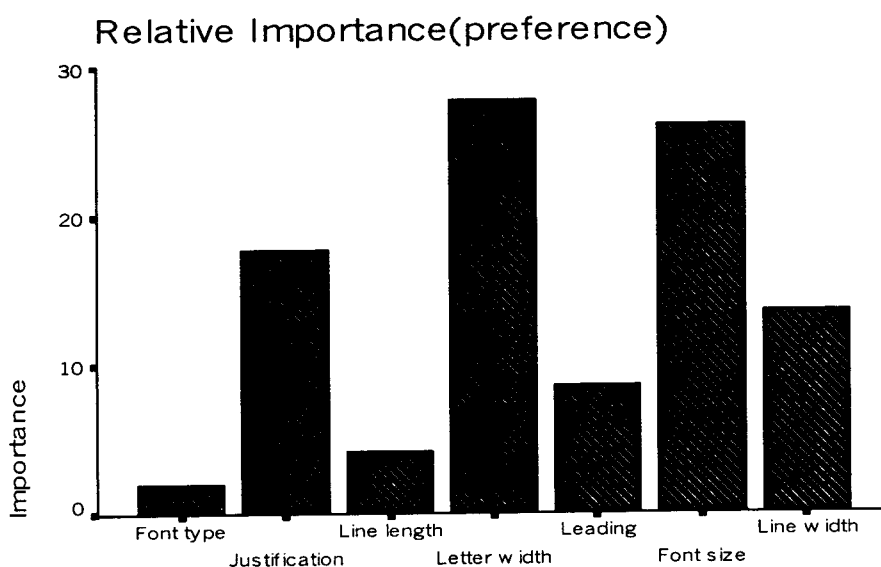


Fig 2. Relative importance of factors affecting text preference

participant rated text preference instead of reading text.

line length(4.15%) and font type(1.97%) was similar.

### 3.2 Results and Discussion

In the analysis of preference for font type, non-square myungjo font was preferred over gothic font. For font size, 10 point was preferred over 8 point or 12 point. Respondents considered 85% and 100% level as more important compared to 90% and 95% level, but this difference was not so great. For leading, -10% was preferred over -20% and 0%. For line width, 200% was most preferred. For line length, short line length was most preferred. In the justification, 'justified' was preferred rather than 'flush left(by letter)' and 'flush left(by word)'.

Relative importance of each factor affecting text preference are presented in Figure 2. As the figure shows, most important factor was letter width(27.29%). Font size(26.17%), justification(17.74%), line width(13.59%), leading(8.59%) are the next important one,

### 4. General discussion

In the comparison of level for each factor obtained from result of experiment 1 and 2, gothic was read faster in reading, but myungjo font was preferred. Font size 10 point, leading -20%, letter width 100%, long line length and 'justified' were read faster, respectively. However, in the case of preference, leading -10%, short line length, and line width 200% was the most preferred. There was slight difference between reading time and preference.

Comparison among relative importance of each factor obtained from Experiment 1, and 2 are presented in Figure 3. Relative importance of justification is important in both cases; Reading Time(RT, 21.10%) and Preference Rating(PR, 17.74%). And importance of line width is similar in both cases, 16.29%(RT), 13.59%(PR). Relative

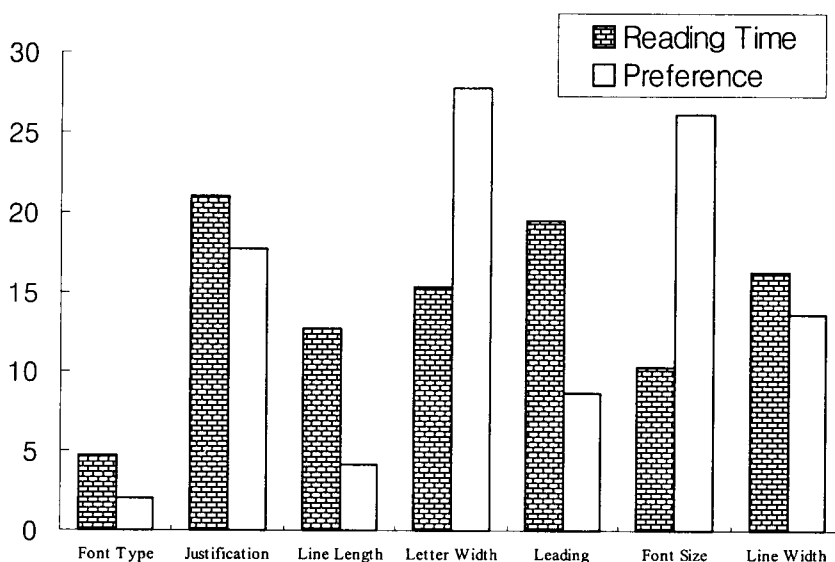


Fig 3. Comparisons among relative importance of factors

importance of leading shows 19.57%(RT), 8.59%(PR). It means that letter width more important in the reading time. But on the other hand, relative importance of letter width was 15.37%(RT), 27.79(PR), respectively. And font size was 10.30%(RT), 26.17%(PR). That is, relative importances of letter width and font size were more effective in the preference.

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